(19) Japan Patent Office (JP)

(12) Publication of Patent Application

(11) Publication Number of Patent Application: Hei-11-349453

(43) Date of Publication of Application: December 21, 1999

(51) Int. Cl.[6] Identification Number

A61K 7/13

FI

A61K 7/13

Request for Examination: not made

Number of Claims: 6 OL (19 pages in total)

(21) Application Number: Hei-10-152380

(22) Application Date: June 2, 1998

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(54) [Title of the Invention] HAIR DYE COMPOSITION

(57) [Abstract]

[Problem] To provide a hair dye composition having a remarkable hair dyeing effect and also an excellent uniformly dyeing property.

[Means for Resolution] A cyclic ketone, a lactone, a cyclic acid anhydride, a cyclic ester or a substituted derivative thereof, in which a ring skeleton comprises a carbon atom, or a carbon atom and an oxygen atom, and one or more of such carbon atoms constituting the ring skeleton constitute a carbonyl group, and a dye are allowed to be contained in a hair dye composition.

[Claims]

[Claim 1] A hair dye composition, being characterized by comprising one type, or two or more types of cyclic compounds selected from among a cyclic ketone, a lactone, a cyclic acid anhydride, a cyclic ester and substituted derivatives thereof in which a ring skeleton comprises a carbon atom, or a carbon atom and an oxygen atom, and one or more of the carbon atoms constituting the ring skeleton constitute a carbonyl group,

and a dye.

[Claim 2] The hair dye composition as set forth in Claim 1, being characterized in that the dye is an oxidation dye or an acid dye.

[Claim 3] The hair dye composition as set forth in Claim 1, being characterized in that the number of atoms which constitute the ring skeleton of such cyclic compound is from 7 to 25.

[Claim 4] The hair dye composition as set forth in Claim 1, being characterized in that the cyclic compound is represented by the following general formula (I) or (II):

General formula (1)

[Chemical 1]

wherein, in the general formula (I), b and d each represent an integer of 0, or from 1 to 24; a and c each represent 0 or 1 and, further, a sum of a twofold number of each of a, b and c, and d is an integer of from 6 to 24; R1 and R2 represent substituents which are same with or different from each other; and e and f each represent 0 or 1 (in the above description, R1 and R2 are each substituted to a hydrogen atom of a methylene group):

General formula (II)

[Chemical 2]

wherein, in the general formula (II), u and x each represent an integer of 0, or from 1 to 23; v and w each represent 0 or 1 and, further, a sum of u, v, w and x is an integer of from 5 to 23; R3 and R4 represent substituents which are same with or different from each other; and y and z each represent 0 or 1 (in a same manner as in the general formula (I), R3 and R4 are each substituted to a hydrogen atom of a methylene group).

[Claim 5] The hair dye composition as set forth in Claim 1, being characterized in that at least one type of the cyclic compound is a cyclic ketone or a substituted derivative thereof.

[Claim 6] The hair dye composition as set forth in Claim 1, being characterized in that at least one type of the cyclic compound is a cyclopentadecanone or a substituted derivative thereof.

[0016]

A number of atoms constituting the ring skeleton of the cyclic compound according to the present invention is preferably from 7 to 25, and more preferably from 10 to 20. The aforementioned cyclic compound, which can be obtained by being extracted from a synthetic or natural product or the like, is not necessarily a genuine product and can be one type or two or more types to be used in combination. Examples of the aforementioned cyclic compounds are given below but the present

invention is not limited thereto.

[0021]

2. Lactone

cyclohexanolide, cycloheptanolide, cyclononanolide, cyclodecanolide, cycloundecanolide, cyclododecanolide, cyclotridecanolide, cyclotetradecanolide, cyclopentadecanolide, cyclohexadecanolide, cycloheptadecanolide, cyclooctadecanolide, cyclononadecanolide, cycloeicosanolide, cycloheneicosanolide, cyclotricosanolide, cyclopentacosanolide, cycloheptacosanolide,

[0022]

5-hexylcyclopentanolide, 3-cyclohexyl-5-methylcyclopentanolide, 2,3-dihydroxy-5-hexylcyclopentanolide, 6-n-butylcyclohexanolide, 2-methylcycloheptanolide, 6-n-butylcyclodecanolide, 12-methylcyclododecanolide, 4-methyltetradecanolide, 3-methylcyclopentadecanolide, 3,15-dimethylcyclopentadecanolide, 14-methylcyclopentadecanolide, 15-methylcyclopentadecanolide, 8-methylcyclohexadecanolide, 9-hydroxycyclohexadecanolide, 3-methylcycloeicosanolide,

[0023]

2-pentene-5-olide, 5-methyl-2-pentene-5-olide,

3,5-dimethyl-2-pentene-5-olide,

3-methyl-5-propyl-3-pentene-5-olide,

5-(2-methylbutyl)-2-pentene-5-olide,

2-pentyl-3-methyl-2-pentene-5-olide, 6-octene-9-olide,

8-tetradecene-14-olide, 6-pentadecene-15-olide,

7-hexadecene-16-olide, 5-hexadecene-16-olide,

6-hexadecene-16-olide, 8-hexadecene-16-olide,

9-hexadecene-16-olide, 10-nonadecene-19-olide,

[0024]

1-oxacyclotetradecane-2,10-dione,

1-oxacycloheptadecane-2,13-dione,

1-oxacycloheptadecane-2,10-dione,

[0025]

2-(2-methylpropyl)-3-oxacyclobutanolide,

3-oxacyclopentanolide, 8-oxacyclodecanolide,

12-oxacyclotetradecanolide, 10-oxapentacyclodecanolide,

3-methy-13-oxacyclopentadecanolide,

6-oxacyclohexadecanolide, 10-oxacyclohexadecanolide,

11-oxacyclohexadecanolide, 12-oxacyclohexadecanolide,

8-oxacycloheptadecanolide, and 22-oxacyclotetracosanolide.

[0083]

Examples 20 to 27:

In prescriptions as shown in Table 16, all components were dissolved by heating at 75°C and, then, cooled in stirring

to prepare acid hair dye compositions of Examples 20 to 27 (pH: 3.5; and viscosity: approximately 60000 cps). Further, a proper quantity ("proper" in short) of each of citric acid and sodium citrate as shown in Table 16 is a quantity which allows a pH value of each of the aforementioned hair dye compositions to be 3.5.

[0084]

[Table 16]

Table 16

Prescriptions of Acid Hair Dye Compositions (Unit: part)

Prescription of hair dye composition	Example							
	20	21	22	23	24	25	26	27
Xanthan gum	1	1	1	1	1	1	1	1
Hydroxy ethyl cellulose	1	1	1	1	1	1	1	1
Glycerin	5	5	5	5	5	5	5	5
Benzyl alcohol	8	8	8	8	8	8	8	8
N-methyl-2-pyrrolidone	12	12	12	12	12	12	12	12
Citric acid	Proper	Proper	Proper	Proper	Proper	Proper	Proper	Proper
Sodium citrate	Proper	Proper	Proper	Proper	Proper	Proper	Proper	Proper
Cyclopentadecanone	1	2			1	2		
Cyclopentadecanolide			1	2			1	2
Black No. 401	0.1	0.1	0.1	0.1				
Violet No. 401	0.4	0.4	0.4	0.4				
Orange No. 205	0.2	0.2	0.2	0.2				
Yellow No. 406	0.1	0.1	0.1	0.1				
Red No. 106					0.3	0.3	0.3	0.3
Purified water	Proper	Proper	Proper	Proper	Proper	Proper	Proper	Proper
Total quantity (part)	100	100	100	100	100	100	100	100

[0085]

Tests and evaluations were conducted by using the thus-prepared acid hair dye compositions in a same manner as in Example 1 (however, the hair dyeing time being 10 minutes and 20 minutes) and in a reference manner and the results are

shown in Table 17. The results show that uneven dyeing did not occur in any of Examples.

[0086]

[Table 17]

Table 17

	Hair dyeing time	
	10 minutes	20 minutes
Example 20	+	+
Example 21	++	++
Example 22	+	+
Example 23	+	+
Example 24	+	++
Example 25	++	++
Example 26	+	+
Example 27	+	++

[0087]

It is found from the aforementioned results that an excellent hair dyeing effect and an uniformly dyeing effect are performed also in the acid hair dye compositions according to the present invention.

[0088]

[Advantage of the Invention]

A hair dye composition according to the present invention that contains a specified cyclic compound in which a ring skeleton comprising a carbon atom, or the carbon atom and an oxygen atom has one or more carbonyl groups as an additive is excellent in that it has a remarkable hair dyeing effect and an uniformly dyeing property which prevents uneven dyeing.